Rays & Means: Software for Improving Utilization of Imaging Resources

H. Hugh Hawkins, M.D., Brad Cohen, Margaret O'Neill, Mike McDermott, M.D.
Department of Radiology, University of Cincinnati College of Medicine.

In order to make decisions, emergency physicians ask specific and very directed questions regarding the capabilities of imaging procedures. They function in an environment in which decisions have an immediate impact on specific patients. "Rays & Means" is a software program intended to improve utilization of imaging resources.

A HyperCard™ stack with a HyBase™ back end, "Rays & Means" modules focus on clinical problems. Each module has a standardized structure to present information about imaging procedures and their clinical application. This includes information about cost, risk, availability, preparation, useful findings, sensitivity and specificity, disadvantages and advantages, and standard application. Information about sensitivity and specificity is derived through evaluation of the literature and evaluation of on-site clinical experience as the latter is available. A database within the project permits compilation of current on-site experience. JPEG-compressed images are linked to the specific findings, which can be indicated on the images by arrows. The images are entered into the project by the combination of a video camera and frame grabber with a user friendly series of functions. The combination of "Rays & Means" software with Macintosh hardware is being used in the Emergency Department at the film reading station. On a case by case basis, information is sought by emergency physicians and by radiologists as needed.

In the future, the software may be incorporated into order entry at work stations, so that the information may be presented in a context sensitive format as procedures are being ordered. The information, especially the findings and the images, are also used as the radiologist is evaluating imaging procedures or when he or she is presenting the findings to clinicians. "Rays & Means" is also used simply as an educational tool.

Each module is relatively small in size, ranging from 1 to 4 megabytes, including a large number of images. Currently a self contained unit, "Rays & Means" is being extended to access interactive videodisc technology and picture archiving and communication systems. It is also being used for medical student education. Students participate in the construction of each module by collecting information in order to answer specific questions.

0195-4210/92/$5.00